

# इंटरनेट

# मानक

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“Step Out From the Old to the New”

IS 2363 (1981): Glossary of terms relating to wire ropes  
[MED 10: Wire Ropes and Wire Products]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*

## GLOSSARY OF TERMS RELATING TO WIRE ROPES

*( First Revision )*

**1. Scope** — Covers definitions of terms relating to wire ropes and accessories.

**2. Terminology**

**A**

**2.1 Abrasion** — Surface wear by an external agency on the wires of a wire rope.

**2.2 Acceleration Stress** — Additional stress imposed on a wire rope due to increasing velocity of load.

**2.3 Aerial Conveyor** — See 2.189.

**2.4 Aircraft Cables** — Strands, cords and wire ropes primarily intended for aircraft controls and for miscellaneous uses in the aircraft industry.

**2.5 Albert's Lay** — Synonymous with 'Lang's Lay' ( see Fig. 1 ).

**2.6 Alternate Lay ( Reverse Lay )** — A rope that is a combination of 'regular lay' and 'Lang's lay'; the lay of the wires in adjacent strands is alternately right-hand lay and left-hand lay.

**2.7 Alternate Lay, Special** — A rope that has two 'Lang's lay' strands alternating with one regular lay strand.

**2.8 Area, Metallic** — Sum of the cross-sectional areas of individual wire in a wire rope or strand.

**2.9 Armoured Rope** — See 2.224.

**B**

**2.10 Black Balance Wheel** — Used on haulage roads; it is essentially a pulley over which the working rope passes and is carried from the wheel in a carriage so that the weight causes sufficient working tension in the rope to take up intermittent draft or shock on the rope. The wheel is run in the same plane as the rope leads.

**2.11 Back-stay** — Guy used to support a boom or mast; or that section of a main cable, as on a suspension bridge, rope-way, etc, leading from the tower to the anchorage.

**2.12 Bail** — A U-shaped member of a bucket, socket or other lifting gear.

**2.13 Bailing Line** — The wire rope which operates the bailer for removing water and drill cuttings in drilling a well.

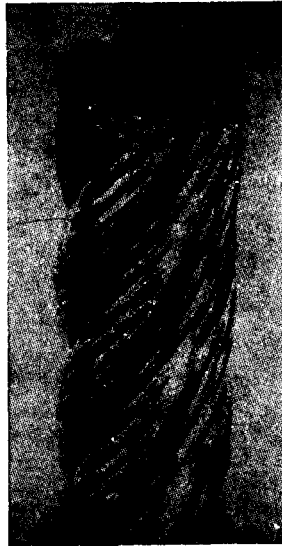
**2.14 Barney Car** — A relatively small car permanently attached to a haulage rope for pushing cars along a haulage system.

**2.15 Basket of Socket** — The conical portion of a socket into which a splayed rope end is inserted and secured with metal.

**2.16 Becket Loop** — A loop of small rope or strand fastened to the end of a large wire rope to facilitate installation.



Right Hand  
Ordinary Lay



Right Hand  
Lang's Lay



Left Hand  
Ordinary Lay



Left Hand  
Lang's Lay

FIG. 1A RIGHT-HAND (Z) LAY, STRANDS IN ROPE  
SPIRAL UPWARDS TO THE RIGHT

FIG. 1B LEFT-HAND (S) LAY, STRANDS IN ROPE  
SPIRAL UPWARDS TO THE LEFT

**2.17 Bending Stress** — Stress imposed on wires of a wire rope by bending.

**2.18 Birdcaging** — A defect in a rope in which all the strands leave their original lay and open out.

**2.19 Bordeaux Connection** — Fitting for connecting a wire rope to a link-chain ( see Fig. 2 ).

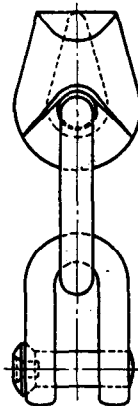


FIG. 2 BORDEAUX CONNECTION

**2.20 Breaking Strength, Actual** — The measured load required to break a straight wire rope in tension.

**2.21 Breaking Strength, Aggregate** — The sum of the breaking strengths in tension of all the wires of a wire rope based on the mean tensile range involved.

**2.22 Breaking Strength, Nominal** — The strength of the wire rope obtained after deducting a percentage to cover the losses which inevitably occurs during stranding and rope making from the aggregate breaking strength.

**2.23 Bridge Cable** — The all metallic wire ropes or strands used as the catenary and suspenders on a suspension bridge.

**2.24 Bridge Socket** — Steel castings with baskets for securing rope ends and equipped with adjustable bolts. The closed type has a 'U-bolt'. The open type has two eye-bolts and a pin.

**2.25 Bridle Cable** — A two-part wire rope sling attached to a single line. The legs of the sling are spread to divide and equalize the load.

**2.26 Bright Rope** — Wire rope made of carbon steel wires that are not coated with zinc or tin.

**2.27 Brittle Fracture** — A fracture of a wire in a wire rope, normal to the axis of the wire without, or with negligible reduction in cross-sectional area at the plane of fracture.

**2.28 Bronze Ropes** — Wire rope made of bronze wires.

**2.29 Bulldog Grips** — A type of clip ( see Fig. 3 ).

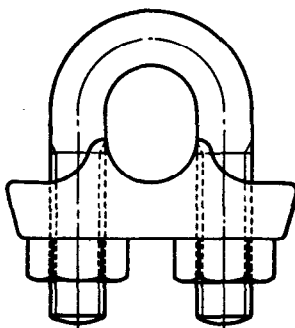


FIG. 3 BULLDOG GRIPS

**2.30 Button Conveyor Rope** — Wire ropes to which buttons or discs are attached at regular intervals to move material in a trough.

### C

**2.31 Cable** — A term loosely applied to wire ropes, wire strands, manila ropes and electrical conductors.

**2.32 Cable-laid Wire Rope** — A rope obtained by spinning six ropes around a fibre core or around a seventh rope.

**2.33 Cable Tool Drilling Line** — The wire rope used to operate the cutting tools in drilling by the 'standard' or 'cable tool' method.

**2.34 Capacity Factor ( Capel Factor or Load Factor )** — In hoisting or winding practice, a term used to describe the ratio of the actual breaking strength of a wire rope to the actual total suspended load at the capel ( that is, neglecting weight of rope ).

**2.35 Capel Factor** — Synonymous with 'Capacity factor'.

**2.36 Casing Line** — Wire rope used to install the casing in an oilwell, synonymous with rotary drilling line in some fields.

**2.37 Centre** — Axial member of the strand about which wires are laid.

**2.38 Centreless Rope** — A wire rope having no core.

**2.39 Centreless Strand** — A strand having no centre.

**2.40 Centre Wire ( King Wire )** — A round or shaped wire used as the axial member of a strand.

**2.41 Choker Rope** — Short wire rope sling used to form a slip noose around the object to be moved or lifted.

**2.42 Circumference** — Measured perimeter of a circle circumscribing the wires of a strand or the strands of a wire rope.

**2.43 Clamps Strand** — A fitting for forming a loop at the end of a length of strand, consisting of two grooved plates and bolts.

**2.44 Cleaning Out Line** — Wire rope used with tools for cleaning out the bottom of an oil well.

**2.45 Cleves** — See 2.206.

**2.46 Clifton Wheel** — A pulley having fewer laps of driving rope used on haulage roads to increase efficient driving friction.

**2.47 Clip** — Fitting for clamping two parts of a wire rope.

**2.48 Closed Socket** — Wire rope and fitting consisting of basket and ball made integral ( see Fig. 4 ).

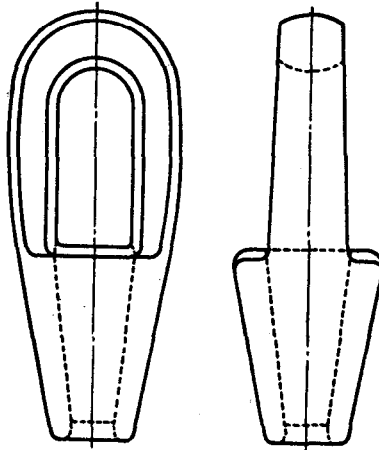


FIG. 4 CLSOED SOCKET

**2.49 Closing Line** — Wire rope that closes a clam shell or orange peel bucket and then operates as a hoisting rope.

**2.50 Coil** — Circular bundle of wire rope not wound on a reel.

**2.51 Come-along** — Device for making a temporary grip on a wire rope.

**2.52 Conical Drum** — Grooved hoisting drum of varying diameter.

**2.53 Construction** — Design of wire rope including number of strands, number of wires per strand and arrangement of wires in each strand ( see Fig. 5 for various types of constructions for wire ropes ).

**2.54 Continuous Bend** — Reaving of wire rope over sheaves and drums so that it bends in one direction, as opposed to reverse bend.

**2.55 Conveyor Rope** — Parallel endless wire ropes used to carry material ( see a/so 2.30 ).

**2.56 Cord** — The term applied to wire ropes of small sizes.

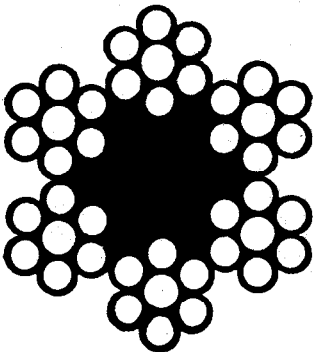
**2.57 Core** — The centre of a strand or the centre of a rope.

**2.58 Coring Line** — Wire ropes used to operate the coring tool for taking core samples during the drilling of a well.

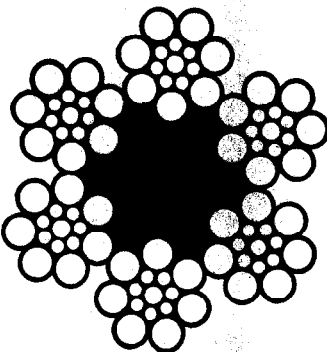
**2.59 Corrosion** — Chemical deterioration of the wires of a rope by exposure to moisture, acids, alkalies or other destructive agents.

**2.60 Corrosion Fatigue** — Term applied to accelerated progressive fractures of wires of a rope when corrosion is present.

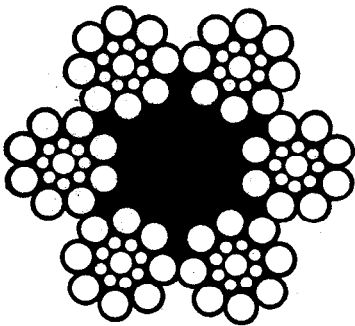
**2.61 Corrugated** — Term used to describe the grooves of a sheave or drum when wore so as to show the impression of a wire rope.



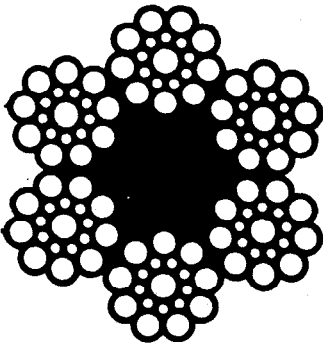
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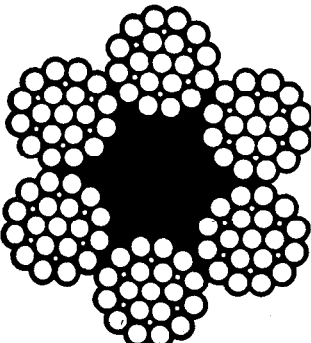
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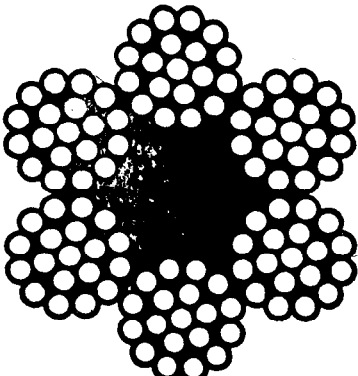
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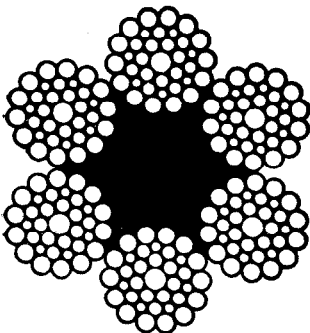
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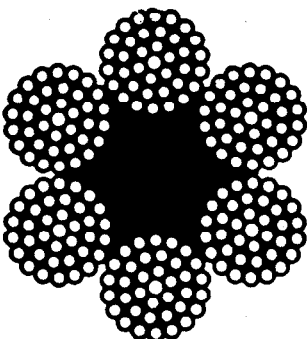
6x12/6+6F/1



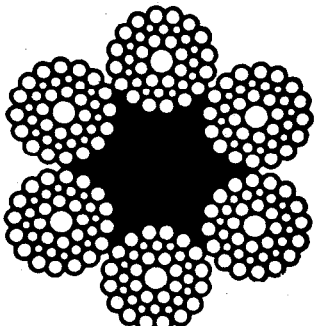
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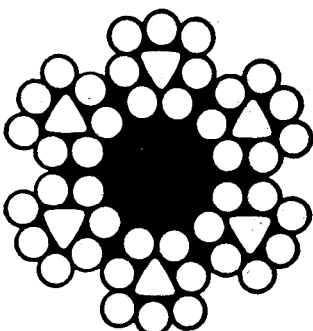
6x14/7 and 7/7/1



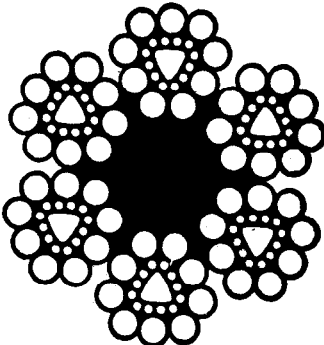
6x18/12/6/1



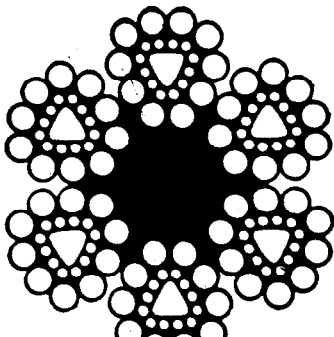
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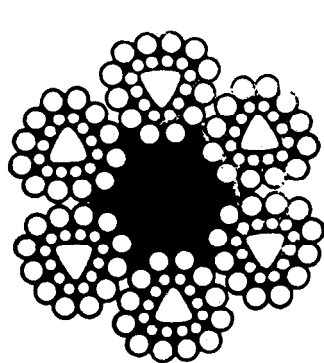


6x9/12 or less/Δ

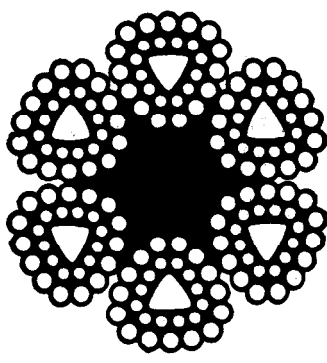


6x10/12 or less/Δ

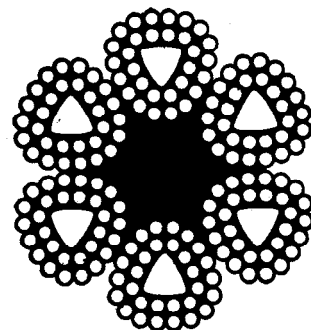
FIG. 5 CONSTRUCTIONS OF WIRE ROPES — Contd



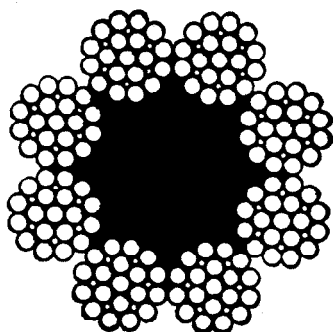
$6 \times 12/12/\Delta$



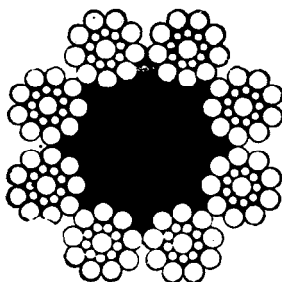
$6 \times 15/12/\Delta$



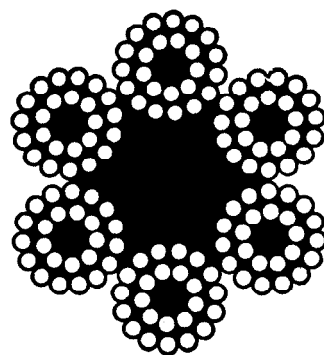
$6 \times 18/12/\Delta$



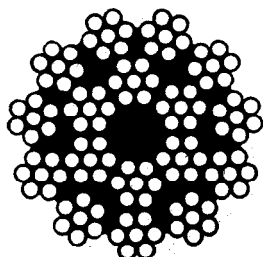
$8 \times 12/6+6F/1$



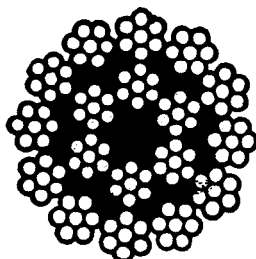
$8 \times 9/9/1$



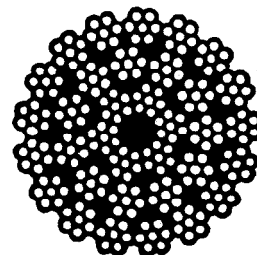
$6 \times 15/9/FIBRE$



$17 \times 7$



$18 \times 7$



$34 \times 7$

FIG. 5 CONSTRUCTIONS OF WIRE ROPES

**2.62 Cotton Centre** — See 2.92.

**2.63 Cotton Core** — See 2.93.

**2.64 Coupling (Track Strand)** — Device for joining the ends of two lengths of track strand.

**2.65 Cover Wires** — Outer layer of wires.

**2.66 Cracker** — Manila rope spliced to the end of a wire rope drilling line.

**2.67 Critical Diameter** — Inside diameter of the smallest bend for a given wire rope which permits the wires and strands to adjust themselves by relative movement while remaining in their normal position.

**2.68 Cross Lay** — A rope in which the wires in the successive layers of the strand are spun at approximately the same lay angle. It follows that the wires in successive layers make point contact.

**2.69 Crowd Cable** — A wire rope used to force the bucket of a power shovel into the material handled.

**2.70 Cylindrical Drum** — Hoisting drum of uniform diameter.

*D*

**2.71 Dead Lane** — An endless wire rope used in drilling for suspending the casing block from the crown block.

**2.72 Deceleration Stress** — Additional stress imposed on a wire rope due to decreasing velocity of the load.

**2.73 Deflection** — Sag of rope in a span. Usually measured at midspan as the depth from the chord joining the points of suspension at the two supports.

**2.74 Diameter** — Diameter (of round wire, round strand or round rope) of the perpendicular cross section of the wire, strand or rope (see Fig. 6).

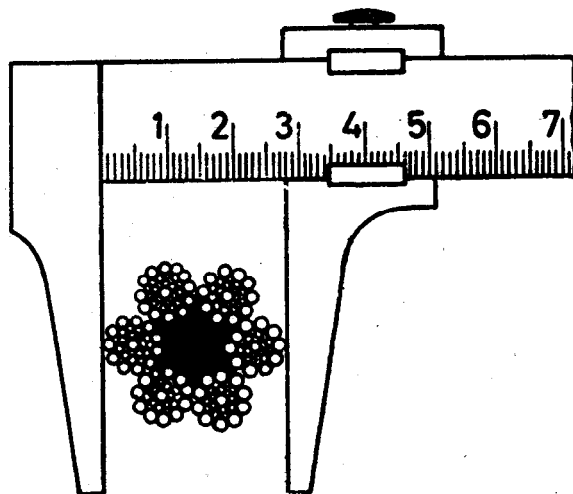


FIG. 6 DIAMETER OF STRANDS

**2.75 Discard Factors** — The factors effecting the discard of the wire ropes, such as limiting work done, wear, corrosion, etc.

**2.76 Dog-Leg** — Permanent short bend or kink in a wire rope caused by improper use.

**2.77 Drag Line** — Wire rope used to pull an excavating or drag bucket.

**2.78 Drilling Line** — See 2.33 and 2.190.

**2.79 Drum** — A cylindrical flanged barrel of uniform or tapering diameter on which rope is wound for operation or storage. It may be smooth or grooved.

**2.80 Ductile Fracture** — A fracture of a wire in a wire rope showing necking of the wire prior to fracture, the planes of fracture usually forming male and female 45° cones.

**E**

**2.81 Efficiency ( Wire Rope )** — Percentage ratio of measured breaking strength of a wire rope to the aggregate breaking strength of all individual wires taken separately.

**2.82 Elastic Limit** — Limit of stress above which a permanent deformation takes place within the material.

**2.83 Endless Rope** — Rope whose two ends are spliced together to form a continuous loop.

**2.84 Equal ( Parallel ) Lay Rope** — A rope in which the wires in the strands are so spun that they all have an equal lay length. It follows that the contact between all wires is linear ( see Fig. 6A ).

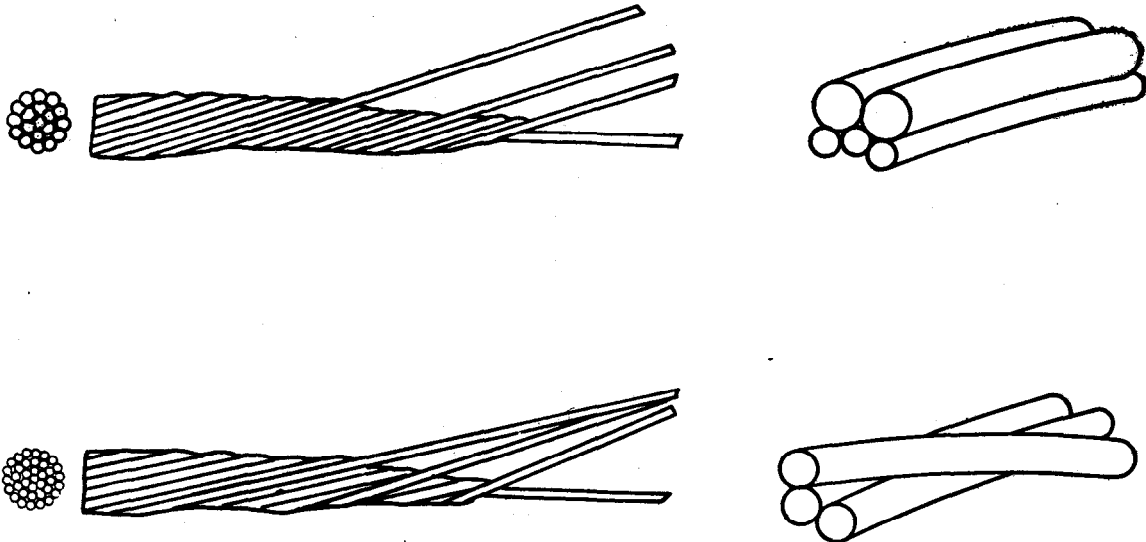


FIG. 6A CHARACTERISTICS OF SPINNING

**2.85 Equalizer Sheave** — A sheave used on hoistic equipment to balance or equalize the load on all the falls of the one rope.

**2.86 Equalizing Slings** — Slings composed of wire rope and equalizing fittings.

**2.87 Eye** — A loop with or without a thimble formed in the end of a wire rope.

**F**

**2.88 Factor of Safety** — Ratio of the nominal breaking strength of a wire rope to maximum dead working load under a given set of working conditions.

**2.89 Fall Rope** — Wire rope in the falls or tackle.

**2.90 Fatigue** — The tendency to fracture by means of a progressive crack and repeated alternating or cyclic stresses considerably below the ultimate tensile strength.

**2.91 Farry Rope** — Wire rope suspended to guide a boat.

**2.92 Fibre Centre** — A rope of fibrous material used as the axial member of a strand.

**2.93 Fibre Core ( FC )** — A sisal, cotton, manile, or jute fibre rope used as the axial member of a wire rope.

**2.94 Fill Factor ( of the Rope )** — The ratio between the sum of the cross-sectional areas of all the wires, and the area of the circumscribed circle of the rope, the diameter of the later being equal to the nominal diameter of the rope.

**2.95 Filler Wire** — Comparatively small wires used in certain constructions of equal lay ropes to obtain the necessary number of interstices for supporting the layer of covering wires.

**2.96 Fitting** — Any accessory used as an attachment for wire rope.

**2.97 Flag** — Marker on a rope to designate position of load.

**2.98 Flat Rope** — A construction made up of unit ropes (generally of four strands called 'reddies') laid side by side and interlaced with stitching wires.

**2.99 Flattened Strand Rope** — A wire rope with either oval or triangular shaped strand which presents a flattened rope surface.

**2.100 Float Angle** — The angle subtended by the rope at its extreme position on the drum to the plane of the nearest fixed pulley over which it passes (see Fig. 7).

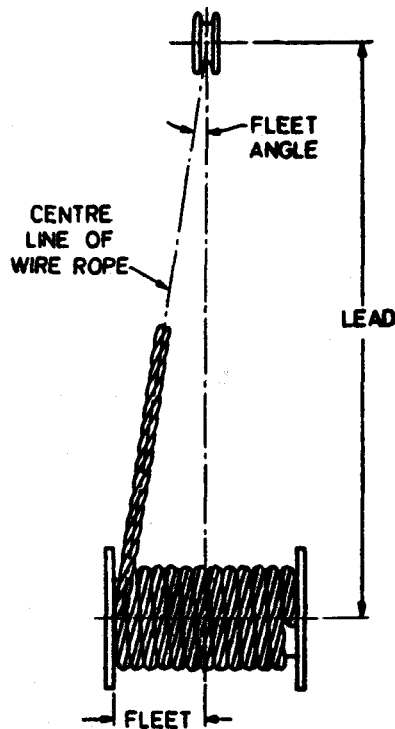


FIG. 7 FLEET ANGLE

**2.101 Fracture** — See 2.27 and 2.80.

**2.102 Friction Winding** — Koepe winding in which instead of a single large rope, multiple ropes are used thereby reducing the diameter of the Koepe pulley. Generally speaking there are two distinct designs of multirope friction winders — the ground type and the tower type.

**2.103 Full-Lock Coil Ropes** — Ropes consisting of one or more layers of round wires wound helically around a core and of one or more layers of suitably shaped wires.

## G

**2.104 Galvanize** — To coat with zinc to protect against corrosion.

**2.105 Galvanized Rope** — Rope made of galvanized wire.

**2.106 Galvanized Strand** — Strand made of galvanized wire.

**2.107 Galvanized Wire** — Wire coated with zinc.

**2.108 Grades, Rope** — Classification of wire rope by the tensile strength of the wire.

**2.109 Grades, Strand** — Classification of strand by its tensile strength.

**2.110 Grain Shovel Rope** — 6×19 marlin-clad rope used for handling grain in scoops.

**2.111 Grommet** — An endless seven strand wire rope made from one continuous length of strand.

**2.112 Grooved Drum** — Drum with grooved surface to accommodate and guide the rope.

**2.113 Grooves** — Depressions in the periphery of a sheave or drum for positioning and supporting a rope.

**2.114 Guard Rail Cable** — A galvanized wire rope or strand erected along a highway.

**2.115 Guy Line** — Strand or rope, usually galvanized, for holding a structure or equipment in position.

**H**

**2.116 Half-Lock Coil Ropes** — Ropes consisting of one or more layers of round wires wound helically around a core. The external layer is made of half-lock and round wires wound alternately.

**2.117 Haulage Rope** — Wire rope used for pulling cars on a track.

**2.118 Hawser** — Wire rope usually, galvanized, used for towing or mooring vessels.

**2.119 Highway Guard Cable** — See 2.114.

**2.120 Holding Line** — Wire rope on a clam shell or orange peel bucket that holds the bucket while the closing line is released to dump the load.

**I**

**2.121 Idler** — Sheave or roller used to guide or support a rope.

**2.122 Incline Ropes** — Ropes used to operate cars on an incline haulage.

**2.123 Independent Wire Rope Core ( IWRC )** — A secondary wire rope used as the axial member of the primary wire rope.

**2.124 Inner Wires** — All wires of a strand except surface or cover wires.

**2.125 Insert** — Fibres so placed as to separate adjacent strands or wires in the same or covering layers.

**2.126 Internally Lubricated** — Wire rope or strand having all wires coated with lubricant.

**2.127 IWRC** — See 2.123.

**K**

**2.128 King Wire** — Synonymous with 'Centre Wire'.

**2.129 Kink** — Sharp bend in a wire rope that permanently distorts the wires and strands.

**2.130 Koepe System of Winding** — A system of winding in which a single rope is connected to the two cages and passes over a grooved winding wheel with an angle of contact between 190° and 230°. A tail rope underneath the cages is invariably used.

**2.131 Lagging** — External wood covering on a reel of rope or strand.

**2.132 Lang's Lay** — Rope in which the direction of lay in the stranding is the same as the direction of lay in closing the rope.

**2.133 Lay** — The direction of strand or wire helix.

**2.133.1 Lay Length ( Pitch ) of a Wire in the Strand** — The pitch of the helix of the axis of the wire in the longitudinal axis of the strand.

**2.133.2 Lay Length ( Pitch ) of Laying of a Strand** — The pitch of the helix of the axis of the strand in the longitudinal axis of the rope.

**2.134 Layer** — A group of adjacent wires helically laid about the strand axis in one operation. A centre wire is not a layer; a strand centre is a layer.

- 2.135 Lead Line** — That part of a rope tackle leading from the first or last sheave to the drum.
- 2.136 Left Lay ( S-Lay )** — The direction of strand or wire helix corresponding to that of a left-hand screw thread.
- 2.137 Line** — Synonymous with 'Wire Rope'.
- 2.138 Load-Bearing Wires** — All the wires which are considered as contributing to the breaking load of the rope.
- 2.139 Load Factor** — Synonymous with 'Capacity Factor and Capel Factor'.
- 2.140 Locked Coil Rope** — Smooth surfaced rope composed of shaped wires laid in concentric layers around a centre of round wires.
- 2.141 Loop** — See 2.87.
- 2.142 Left-Hand Ordinary Lay** — A stranded rope where the individual wires coil around the rope in the opposite direction to that of the left hand directed strand.
- 2.143 Left-Hand Langs Lay** — A stranded rope where the individual wires also coil around the rope in the left hand direction as do the strands.

## M

- 2.144 Marlin Spike** — Tapered steel pin used in splicing of wire rope.
- 2.145 Measured ( Actual ) Aggregate Breaking Load ( of all the Wires )** — The sum of the breaking loads of all individual wires in the rope resulting from the tensile testing in the prescribed manner of all the wires taken from the completed rope.
- 2.146 Measured ( Actual ) Breaking Load** — The maximum load obtained by testing a sample of the rope to destruction using a prescribed method.
- 2.147 Measured ( Actual ) Diameter** — The diameter obtained by measuring, using a prescribed method.
- 2.148 Measured Value** — The value derived by direct measurement in the prescribed manner.
- 2.149 Messenger Strand** — Galvanized strand or bronze strand used to support telephone and electrical cables.
- 2.150 Metallic Cores** — See 2.123.
- 2.151 Minimum Breaking Load** — The calculated product of the square of the nominal rope diameter ( in square millimetres ), the nominal tensile strength of all the wires ( in newtons per square millimetre ) and coefficient appropriate to the construction of the rope.
- 2.152 Modulus of Elasticity** — Mathematical quantity giving the ratio, within the elastic limit, between a definite range of unit stress on a wire rope to the corresponding unit elongation.
- 2.153 Mooring Lines** — Galvanized wire rope usually 6×12, 6×24 or spring lay construction, for holding ships to dock.
- 2.154 Multiple Layer Strand** — A strand having two or more layers of wires. It may or may not have a centre. It may be fabricated in one or more operations.
- 2.155 Multiple Operation Strand** — A multiple layer strand in which at least one layer has a different pitch than the other layer and is laid in a separate stranding operations.

## N

- 2.156 Nominal Aggregate Breaking Load ( of All the Wires )** — The calculated product of the total nominal cross-sectional areas and the nominal tensile strength of all the wires in the rope.
- 2.157 Nominal Diameter** — The nominal value of the diameter of the wire, strand or rope.
- 2.158 Nominal Value** — The conventional value by which the characteristic is designated.

**2.159 Nominal Spinning Loss** — The difference between the nominal aggregate breaking load and the minimum breaking load of the rope. It is fixed for each type of rope on the basis of the statistically determined mean value of the measured spinning loss.

**2.160 Non-Preformed** — The wires and/or strands not shaped to the helical form they assume in the strand and/or rope.

**2.161 Non-Rotating Wire Rope** — Wire rope containing more than one layer of strands, one or more of these layers being laid in opposite directions resulting in the finished rope possessing qualities which render it considerably less liable to rotate under load, than a standard construction.

**2.162 Non-Spinning Wire Rope** — See 2.161.

O

**2.163 One Operation Strand** — A strand in which all the layers have the same pitch and lay and are laid in one stranding operation. A single layer strand is always a one operation strand.

**2.164 Open Socket** — Wire rope fitting consisting of a 'basket' and two 'ears' with a pin (see Fig. 8).

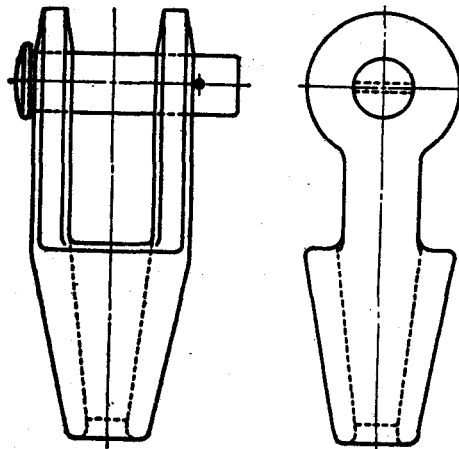


FIG. 8 OPEN SOCKET

**2.165 Ordinary Lay** — See 2.162.

**2.166 Outer Wires** — See 2.65.

**2.167 Overlap or Overwind** — When the rope leaves the drum or the clifton wheel from its upper side, the rope is said to be overwound.

**2.168 Oval Strand** — A strand having a perpendicular cross section which is approximately the shape of an oval.

P

**2.169 Parallel Lay** — Synonymous with 'Equal Lay'.

**2.170 Partial Measured Spinning Loss** — The difference between the measured aggregate breaking load and the measured breaking load. This difference results from the effects and the interaction of tensile, bending, and shearing stresses in the complete rope.

**2.171 Partial Measured Spinning Loss Between the Aggregate Breaking Loads** — The difference between the sums of the breaking loads of all wires in the rope measured before and after spinning, resulting from the deformation of the wires and the alteration of their structure due to spinning.

**2.172 Peening** — Permanent distortion of outside wire in a rope caused by pounding (see also 2.175).

**2.173 Pitch or Length of Lay** — The distance parallel to the axis of the rope ( or strand ), in which a strand ( or wire ) makes one complete helical convolution about the core ( or centre ).

**2.174 Plastic Flow** — See 2.172.

**2.175 Plastic Wear** — Reduction in the measured diameter of a wire rope due to plastic flow of the metal in the wires without or with negligible reduction in the cross-sectional area of the wires.

**2.176 Preformed** — The wires and/or strands shaped to the helical form they assume in the strand and/or rope.

**2.177 Prestressing** — Stressing a wire rope or strand before use under such a tension and for such a time that the constructional stretch is largely removed.

**2.178 Proportional Limit** — Considered synonymous with ' Elastic Limit '.

## R

**2.179 Rated Capacity** — A load value which a wire rope or wire rope sling. When new, is designed to handle under given or assumed factors of safety and operating conditions.

**2.180 Reel** — The flanged spool on which wire rope or strand is wound for storage or shipment.

**2.181 Reeving** — The process of passing the rope over all the pulleys, sheaves and the drums.

**2.182 Regular Lay** — Rope in which the direction of lay in the stranding is opposite to the direction of lay in closing the rope ( see Fig. 1 ).

**2.183 Reserve Strength** — Strength represented by the inner wires of a wire rope.

**2.184 Reverse Bend** — Reeving of a wire rope over sheaves and drums so that it bends in opposite directions ( see Fig. 9 ).

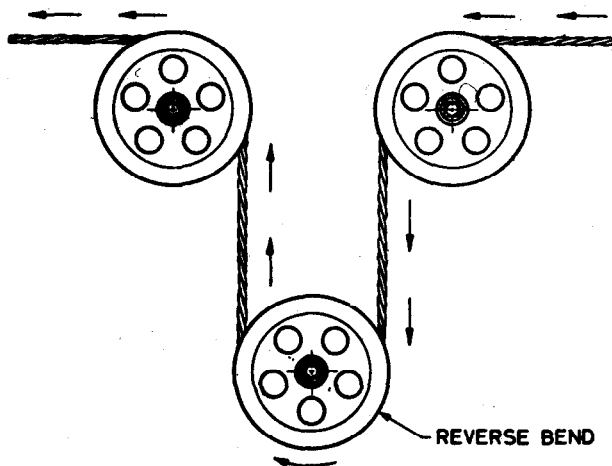


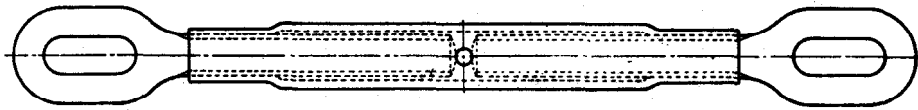
FIG. 9 REVERSE BEND

**2.185 Reverse Lay** — A strand in which the direction of lay is reversed at intervals along its length.

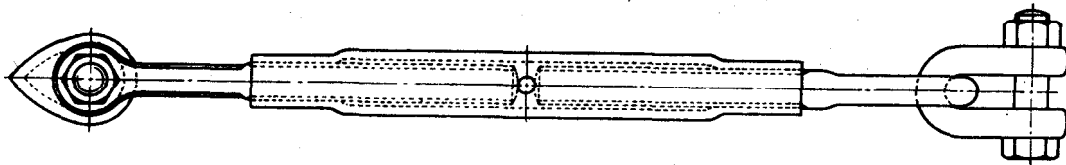
**2.186 Right Lay ( Z-Lay )** — The direction of strand or wire helix corresponding to that of a right-hand screw thread.

**2.187 Rigging Screws** — Screws which provide means for length adjustments or for tensioning. They are used for setting up ship's standing riggings ( see Fig. 10 ).

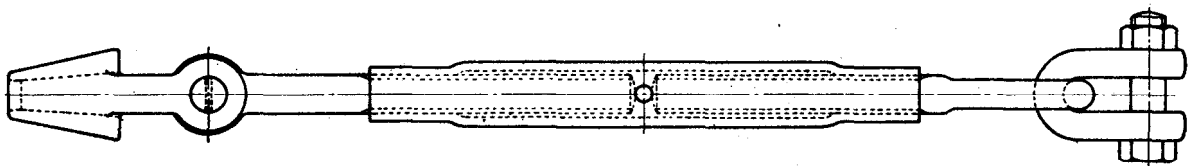
**2.188 Rollers** — Relatively small diameter cylinders or wide faced sheaves for supporting or guiding ropes.



10A



10B



10C

FIG. 10 RIGGING SCREWS

**2.189** *Ropeway* — Aerial conveying system for transporting single loads along suspended track cable.

**2.190** *Rotary Lines* — The wire rope on a rotary drilling rig which controls the position of the drill pipe and raises or lowers the same.

**2.191** *Round Strand* — A strand having a perpendicular cross section which is approximately the shape of a circle.

**2.192** *Running Rope* — A term used for those shipping and engineering ropes which are employed on cranes, winches, etc, and therefore, move in operation as opposed to rigging ropes which do not move and are referred to as 'Standing Ropes'.

**2.193** *Ribbon Strand* — A strand having a perpendicular cross section which is approximately the shape of a rectangle or a parallelogram.

**2.194** *Right-Hand Ordinary Lay* — A stranded rope where the individual wires coil around the rope in the opposite direction to that of right hand directed strands.

**2.195** *Right-Hand Langs Lay* — A stranded rope where the individual wires coil around the rope in the right direction as do the strands.

S

**2.196** *Safety Factor* — See 2.88.

**2.197** *Sag* — See 2.73.

**2.198** *Sand Line* — See 2.13.

**2.199** *Sash Cord* — Term applied to small wire ropes commonly made of iron, bronze or copper wires.

**2.200** *Seale* — A strand construction having one size of cover wires with the same number of one size of smaller wires in the inner lay, and each layer having the same length and direction of lay. Most common construction is one centre wire, nine inner wires, and nine cover wires.

**2.201 Seize** — To bind securely a wire rope or strand with seizing wire or strand or with a wrapping of fibre cord.

**2.202 Seizing Strand** — Small strand usually of seven wires made of soft annealed iron wire ( see also 2.201 ).

**2.203 Seizing Wire** — Single wires, or wires formed into strands, used for making a close-wound helical serving to retain the components of a strand or rope in their assembled position ( see also 2.200 ).

**2.204 Serve** — See 2.200.

**2.205 Sewing Wires** — See 2.98.

**2.206 Shackle** — A U-shaped fitting with pin ( see Fig. 11 ).

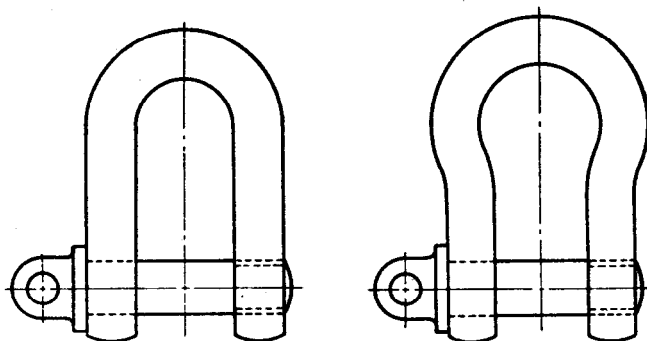


FIG. 11 SHACKLES

**2.207 Sheave** — A grooved pulley for use with rope.

**2.208 Shipping Rope** — A galvanized steel wire rope used in shipping.

**2.209 Single Layer Strand** — A strand having either a fibre or wire centre and one layer of uniform size wires. It is fabricated in one operation.

**2.210 Single Strand Ropes** — Ropes consisting of one or more layers of round wires wound helically around a core.

**2.211 S-Lay** — Synonymous with 'Left Lay'.

**2.212 Slings** — Wire ropes made into forms, with or without fittings, for handling loads and so made as to permit the attachment of a lifting medium ( see Fig. 12 ).

**2.213 Slings, Braided** — A very flexible sling composed of several individual wire ropes braided into a single sling.

**2.214 Smooth Coil Strand** — Strand composed entirely of round wires, used as an aerial conveyor track cable.

**2.215 Smooth Faced Drum** — Drum with a plain face, not grooved.

**2.216 Socket** — Type of wire rope fitting ( see also 2.24, 2.48 and 2.250 ).

**2.217 Special Alternate Lay** — A rope that has two Lang's lay strands alternating with one regular lay strand.

**2.218 Spinning** — The name given to the group of operations which includes stranding of wires and closing of strands.

**2.219 Spiral Groove** — Groove which follows the path of a helix around the drum, as the thread of a screw.

**2.220 Splicing** — Securing the ends of a rope into its own parts by interweaving the strands or by methods of mechanical splicing.

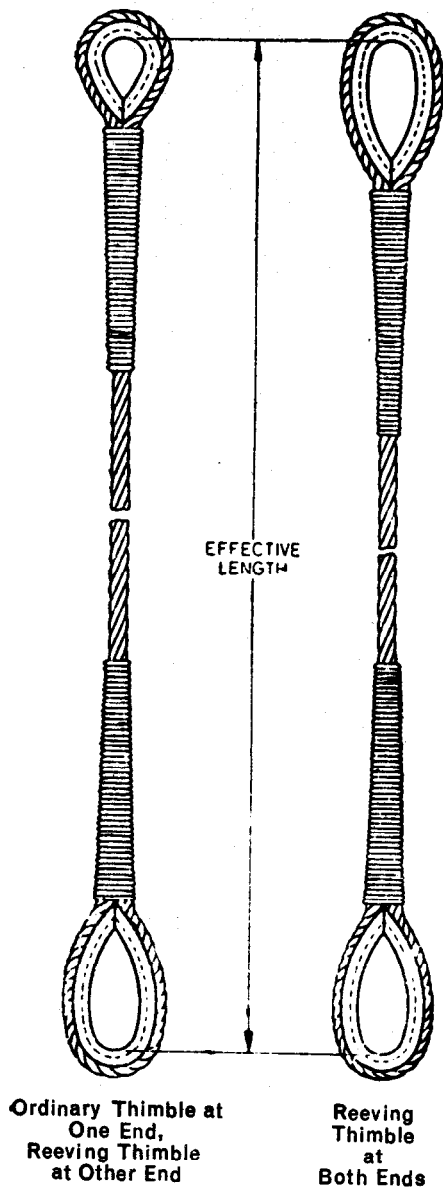


FIG. 12A ONE-LEG WIRE ROPE SLINGS

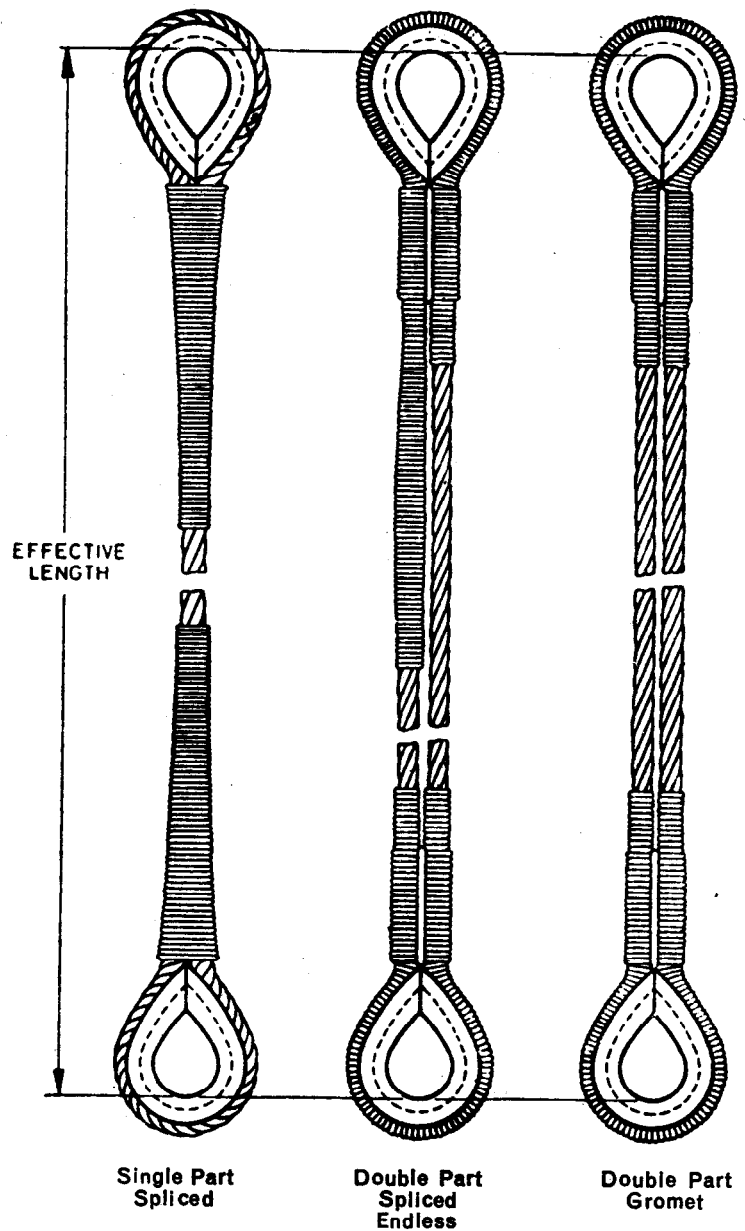


FIG. 12B ONE-LEG WIRE ROPE SLINGS WITH ORDINARY THIMBLES AT BOTH ENDS

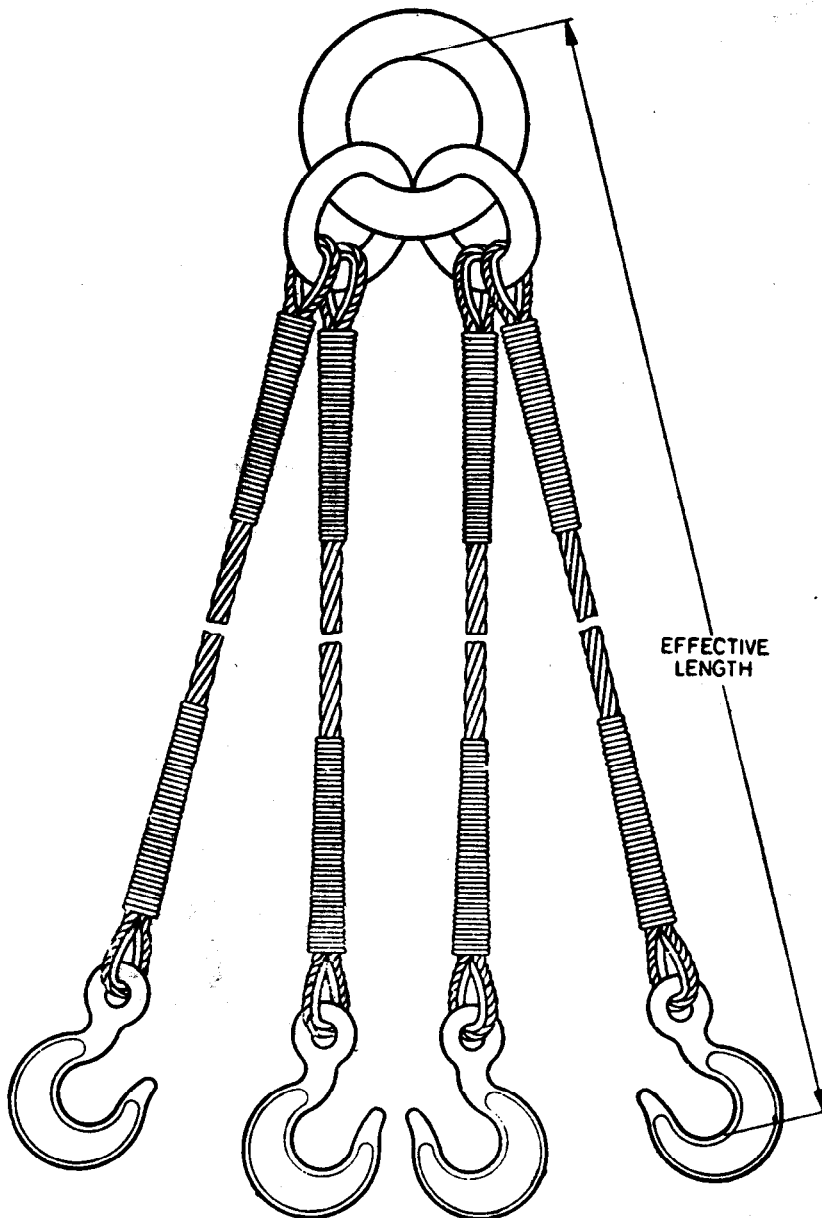


FIG. 12C FOUR-LEG WIRE ROPE SLING WITH MAIN AND INTERMEDIATE RINGS AT ONE END, HOOKS AT OTHER ENDS

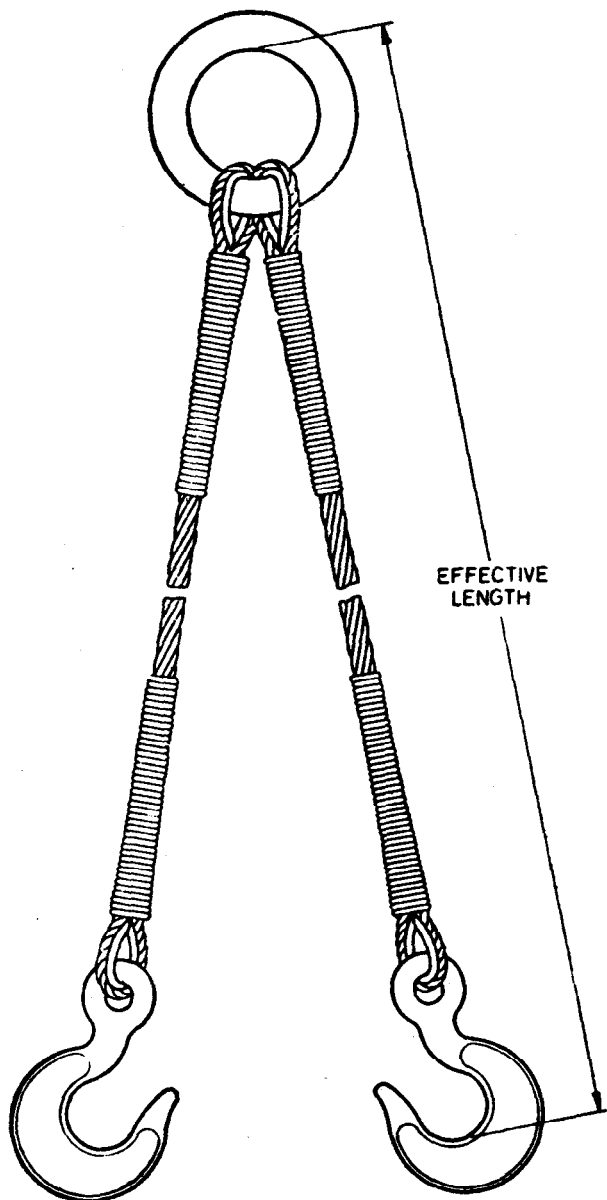
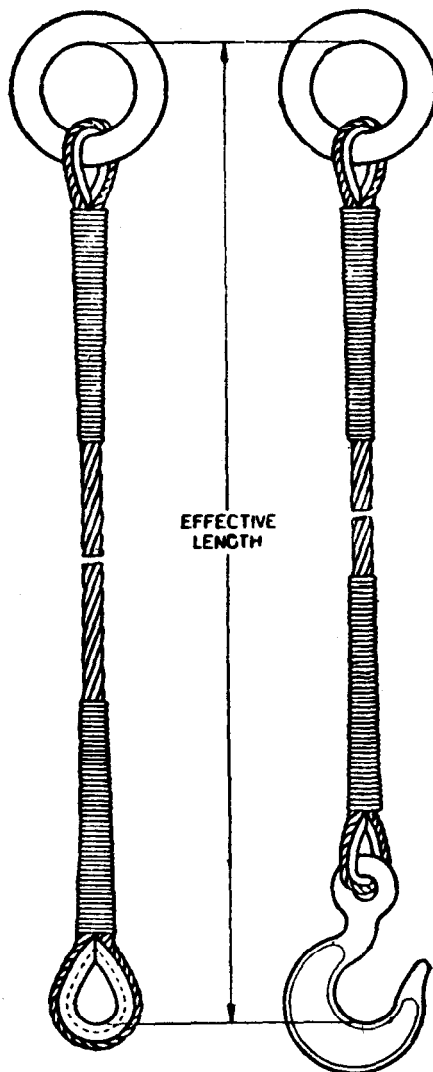


FIG. 12D TWO-LEG WIRE ROPE SLING WITH MAIN RING AT ONE END, HOOKS AT OTHER ENDS



Ring at One  
End, Ordinary  
Thimble at  
Other End

Ring at  
One End,  
Hook at  
Other End

FIG. 12E ONE-LEG WIRE ROPE SLINGS

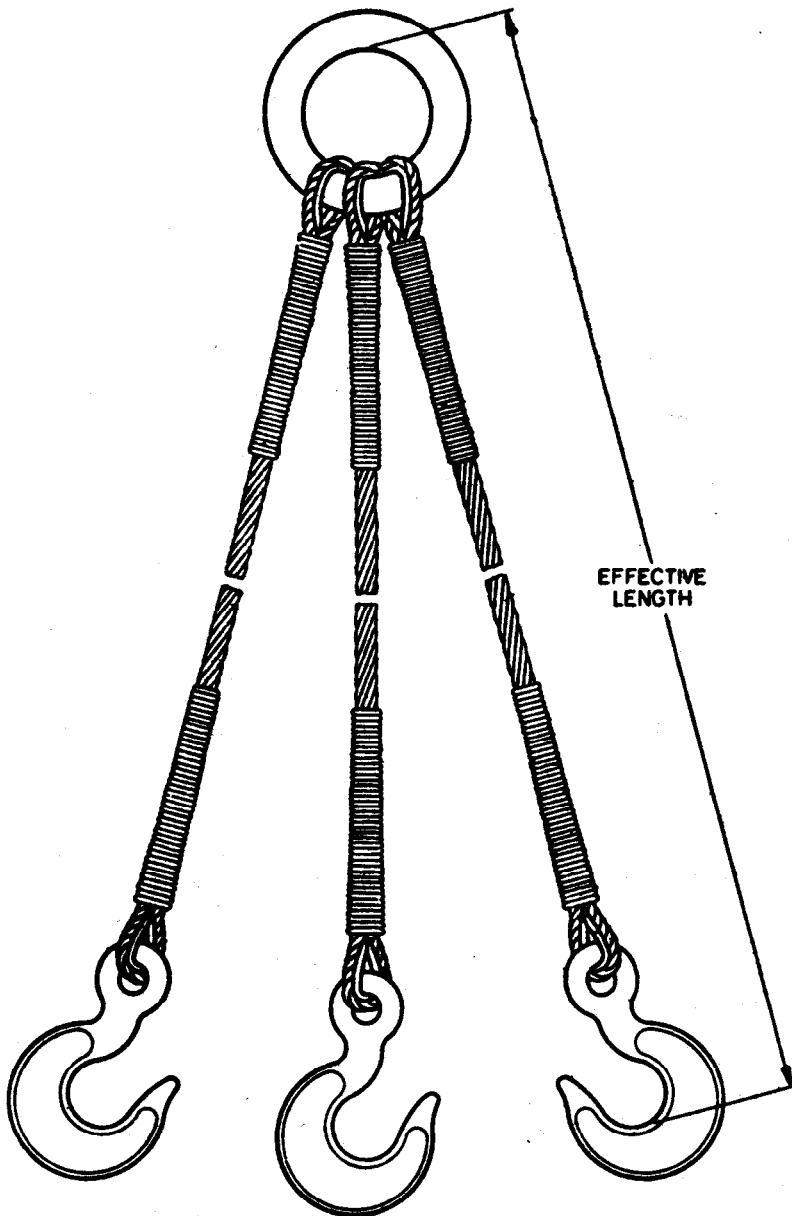


FIG. 12F THREE-LEG WIRE ROPE SLING WITH MAIN RING AT ONE END, HOOKS AT OTHER ENDS

**2.221 Spring Lay Rope** — Preformed cable laid rope consisting of six ropes around a fibre core. Each individual rope consisting of three galvanized, steel strands and three fibre cords laid alternately around a fibre core.

**2.222 Stainless Steel Rope** — Wire rope made of chrome-nickle steel wire having great resistance to corrosion.

**2.223 Standing Rope** — See 2.192.

**2.224 Steel Clad Rope** — Rope with individual strands spirally wrapped with flat steel wire.

**2.225 Stitching Wires** — Single wires, or wires formed into strands, used for the stitching of flat ropes.

**2.226 Stirrup** — The U-bolt or eye-bolt attachment of a bridge socket.

**2.227 Stone Sawing Strand** — 2 or 3 wire strand used in sawing stone or slate.

**2.228 Strand** — An element of rope consisting of an assembly of several wires of appropriate shape and dimensions spun helically in one or more layer.

**Note** — In some cases a single strand constitutes a rope.

**2.229 Strand Centre** — A wire strand used to replace a centre wire of a multiple layer strand as the axial member of a strand.

**2.230 Strand Core** — A wire strand used as the axial member of a wire rope.

**2.231 Strand Rope** — An assembly of several strands spun helically in one more layers around a core.

**2.232 Suspension Bridge Cable** — See 2.23.

**2.233 Suspension Rope** — A wire rope for use with lifts and hoists, attached by cold flowing method.

**2.234 Swaged Fittings** — Fittings in which wire rope is inserted and attached by cold flowing method.

**2.235 Triangular Strand** — A strand having a perpendicular cross section which is approximately the shape of a triangle.

**2.236 Tag Line** — A small wire rope used to prevent rotation of load.

**2.237 Tapered Drum** — See 2.52.

**2.238 Tapering and Welding** — Reducing the diameter of the end of a wire rope and welding it to facilitate reeving.

**2.239 Tensile Grade** — A level of requirement of tensile strength. It is designated by the minimum value of the appropriate range of the tensile strength.

**2.240 Thimble** — Grooved metal fitting to protect the eye of a wire rope ( see Fig. 13 ).

**2.241 Tiller Rope** — A very flexible operating rope, commonly made by cable lay size 6 × 7 ropes around a fibre core.

**2.242 Tinned Wire** — Wire coated with tin.

**2.243 Total Spinning Loss Measured T** — The difference between the sum of the breaking loads of all wires in the rope, measured before spinning and the measured breaking load of the rope.

**2.244 Towline** — Galvanized wire rope used for towing.

**2.245 Track Cable** — The suspended wire rope or strand along which the carriers move on an aerial conveyor.

**2.246 Traction Rope** — Wire rope that propels the carriers on an aerial conveyor.

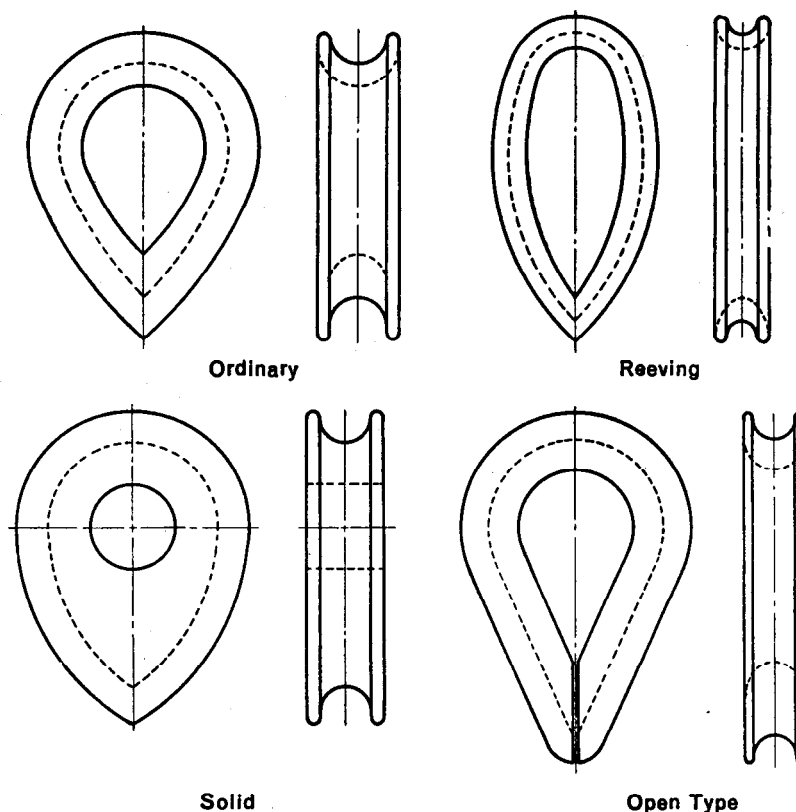


FIG. 13 THIMBLES

**2.247 Turnbuckle or Stretching Screw** — Device attached to wire rope for making limited adjustments in length. It consists of a barrel and right and left-hand threaded bolts ( see Fig. 14 ).

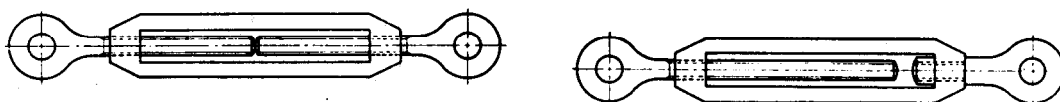


FIG. 14 TURNBUCKLE

U

**2.248 Underlap or Underwind** — When the rope leaves the drum or the cliften wheel from its under-side, the rope is said to be underwound.

W

**2.249 Warrington** — A strand construction in which one layer of wires, usually the outer, is composed of alternating large and small wires so that the inner layer of wires fits the interstices of the outer layer.

**2.250 Wedge Socket** — Wire rope fitting in which the rope end is secured by a wedge.

**2.251 Winding Rope** — A wire rope used for winding purposes in mines.

**2.252 Wire (Round)** — A single circular roped continuous length of metal cold-drawn from a rod.

**2.253 Wire (Shaped)** — A single geometrical shaped ( other than round ) continuous length of metal either cold-drawn or cold-rolled from a rod.

**2.254 Wire Rope** — A construction of several strands wound helically in one or more layers.

**Note** — In some cases, a rope is constituted by a single strand.

- a) *Ropes with low internal stresses* — Ropes which are manufactured using methods aimed at reducing internal stresses arising from spinning. These methods can include preforming and postforming.
- b) *Ropes with low torsional stresses* — Ropes in which the wires and layers of strands are disposed in such a manner that, when under tension due to a free axial load, the rope will have a minimum torque or a minimum degree of rotation. This result can be obtained in different degree either by using two or more layers of strands of the same construction non-rotating ropes or by using one layer of strands around an independent wire rope core ( semi-balanced ropes ).

**Z**

**2.255 Z-lay** — Synonymous with ' Right Lay '.

**EXPLANATORY NOTE**

This standard was first issued in 1965. The present revision has been taken up to incorporate certain additional definitions and to slightly modify some of the existing definitions.

It is felt that the revised version of the glossary will further do away with variation in the terminology relating to wire ropes and accessories and will help in their correct interpretation.

Whenever the definitions are rather involved, sketches have been made to make the definition clear. This glossary is not to be considered as technical dictionary. This represents an attempt to further simplify the buying and specifying of wire ropes by standardizing nomenclature.

While preparing this standard assistance has been derived from ISO 2532-1974 'Steel wire ropes — Vocabulary' issued by International Organization for Standardization ( ISO ).